

This listing of claims will replace all prior versions, and listings of claims in the application.

Listing of Claims:

1-19. (Cancelled)

20. (Currently Amended) A method of reducing contention in a Local Area Network (LAN) switch ~~eongestion on an Ethernet LAN coupled to a Wide Area Network (WAN)~~, comprising the steps of:

- (1) collecting in a single device a plurality of different data signals including at least analog-voice data and analog-video data, ~~wherein the received data signals are not synchronized with each other~~;
- (2) converting each of the plurality of different data signals into digital form;
- (3) transmitting the data signals in digital form from step (2) over a backplane bus to a CPU in the single device;
- (4) in the CPU, converting the digital data into network packets destined for delivery over the Ethernet LAN switch ~~and over the WAN~~; and
- (5) in the CPU, scheduling the transmission of the network packets ~~over the Ethernet LAN~~ in such a way as to avoid eongestion contention in the LAN switch among network packets ~~that would otherwise occur if the network packets had been processed by separate devices coupled to the Ethernet LAN switch~~.

21. (Currently Amended) The method of claim 20, 1, wherein the scheduling step comprises:

from a transmitting node, transmitting a proposed delivery schedule to an intended receiving node, wherein the proposed delivery schedule indicates time slots corresponding to times during which the transmitting node proposes to transmit packets to the intended receiving node;

receiving from the intended receiving node an indication as to whether the proposed delivery schedule is acceptable to the intended receiving node; and

if the proposed delivery schedule is acceptable, transmitting packets to the intended receiving node according to the proposed delivery schedule.

22. (Currently Amended) The method of claim 20, 1, wherein the scheduling step comprises:

from a transmitting node, transmitting a query to an intended receiving node; receiving from the intended receiving node a reception map indicating time slots during which transmission to the intended receiving node would not conflict with other transmitters;

from the transmitting node, transmitting a proposed transmission map indicating time slots, compatible with the reception map, during which the transmitting node intends to transmit packets; and

from the transmitting node, transmitting packets to the intended receiving node according to the proposed transmission map.

23. (Currently Amended) The method of claim 20, 1, wherein the scheduling step comprises:

from a transmitting node, transmitting a bandwidth requirement to an intended receiving node;

receiving from the intended receiving node a transmission map indicating time slots during which transmission to the intended receiving node would not conflict with other transmitters; and

from the transmitting node, transmitting packets to the intended receiving node according to the transmission map.

24. (Currently Amended) The method of claim 20, 1, wherein the scheduling step comprises:

from a transmitting node, transmitting a query to a designated master node for a LAN-wide transmission map;

receiving from the master node a LAN-wide transmission map indicating time slots during which transmission to an intended receiving node would not conflict with other transmitters;

transmitting to the master node a proposed transmission map compatible with the LAN-wide transmission map, said proposed transmission map indicating time slots during which the transmitting node intends to transmit packets to the intended receiving node; and

from the transmitting node, transmitting packets to the intended receiving node according to the proposed transmission map.

~~the step of generating a delivery schedule prior to scheduling delivery of the network packets, wherein the delivery schedule avoids congestion with other packets on the packet network.~~

25. (Cancelled)

26. (New) The method of claim 20, wherein the LAN switch is an Ethernet LAN switch.

27. (New) The method of claim 26, wherein the Ethernet LAN switch is coupled to a Wide Area Network (WAN) router.

28. (New) The method of claim 20, wherein the plurality of different data signals originate from a plurality of local transmitters connected to the single device.

29. (New) A device configured to reduce contention in a LAN switch, the device comprising:

- a CPU;
- a backplane bus;

an internal timing system capable of synchronizing with one or more external time sources;

a plurality of modules coupled to the backplane bus, where each module is configured to receive data of a different type and present the received data to the CPU over the backplane bus; and

a packet network interface connectable to a Local Area Network (LAN) switch, wherein the device is configured to perform the steps of:

(1) collecting a plurality of different data signals from the plurality of modules;

(2) converting each of the plurality of different data signals into digital form;

(3) transmitting the data signals in digital form from step (2) over the backplane bus to the CPU;

(4) in the CPU, converting the digital data into network packets destined for delivery over the LAN switch; and

(5) in the CPU, scheduling the network packets over the LAN switch in such a way as to avoid contention in the LAN switch that would otherwise occur if the network packets had been processed by separate devices coupled to the LAN switch.

30. (New) The device of claim 29, wherein the scheduling step comprises:

transmitting a proposed delivery schedule to an intended receiving node, wherein the proposed delivery schedule indicates proposed time slots for transmission of packets to the intended receiving node;

receiving from the intended receiving node an indication as to whether the proposed delivery schedule is acceptable to the intended receiving node; and

if the proposed delivery schedule is acceptable, transmitting packets to the intended receiving node according to the proposed delivery schedule.

31. (New) The device of claim 29, wherein the scheduling step comprises:

transmitting a query to an intended receiving node;

receiving from the intended receiving node a reception map indicating time slots during which transmission to the intended receiving node would not conflict with other transmitters;

transmitting a proposed transmission map indicating time slots, compatible with the reception map, for transmission of packets to the intended receiving node; and

transmitting packets to the intended receiving node according to the proposed transmission map.

32. (New) The device of claim 29, wherein the scheduling step comprises:

transmitting a bandwidth requirement to an intended receiving node;

receiving from the intended receiving node a transmission map indicating time slots during which transmission to the intended receiving node would not conflict with other transmitters; and

transmitting packets to the intended receiving node according to the transmission map.

33. (New) The device of claim 29, wherein the scheduling step comprises:

transmitting a query to a designated master node for a LAN-wide transmission map;

receiving from the master node a LAN-wide transmission map indicating time slots during which transmission to an intended receiving node would not conflict with other transmitters;

transmitting to the master node a proposed transmission map compatible with the LAN-wide transmission map, said proposed transmission map indicating time slots during which the transmitting node intends to transmit packets to the intended receiving node; and

transmitting packets to the intended receiving node according to the proposed transmission map.

34. (New) The device of claim 29, wherein the LAN switch is an Ethernet LAN switch.

35. (New) The device of claim 34, wherein the Ethernet LAN switch is coupled to a Wide Area Network (WAN) router.

36. (New) The device of claim 29, wherein the plurality of modules comprises a plurality of local transmitters connected to the device.

37. (New) A system for reducing contention in a Local Area Network (LAN) switch comprising a plurality of devices, each said device comprising:

a CPU;

a backplane bus;

an internal timing system capable of synchronizing with one or more external time sources;

one or more modules coupled to the backplane bus, where each module is configured to receive data and present the received data to the CPU over the backplane bus; and

a packet network interface connectable to a Local Area Network (LAN) switch, wherein each said device is configured to perform the steps of:

(1) collecting a plurality of different data signals from the plurality of modules;

(2) converting each of the plurality of different data signals into digital form;

(3) transmitting the data signals in digital form from step (2) over the backplane bus to the CPU;

(4) in the CPU, converting the digital data into network packets destined for delivery over the LAN switch; and

(5) in the CPU, scheduling the network packets over the LAN switch in such a way as to avoid contention in the LAN switch that would otherwise occur if the network packets had been processed by separate devices coupled to the LAN switch, and

wherein each said device is connected to the same LAN switch, and

wherein each said device coordinates the scheduling of network packets over the LAN switch with the other devices so as to avoid contention in the LAN switch.

38. (New) The system of claim 37, wherein at least one of the plurality of devices schedules packet delivery over the LAN by agreeing upon time slots during which network packets will be transmitted to the LAN switch.

39. (New) The system of claim 38, wherein the scheduling of packet delivery over the LAN comprises:

transmitting a proposed delivery schedule to an intended receiving node, wherein the proposed delivery schedule indicates proposed time slots for transmission of packets to the intended receiving node;

receiving from the intended receiving node an indication as to whether the proposed delivery schedule is acceptable to the intended receiving node; and if the proposed delivery schedule is acceptable, transmitting packets to the intended receiving node according to the proposed delivery schedule.

40. (New) The system of claim 38, wherein the scheduling of packet delivery over the LAN comprises:

transmitting a query to an intended receiving node;
receiving from the intended receiving node a reception map indicating time slots during which transmission to the intended receiving node would not conflict with other transmitters;
transmitting a proposed transmission map indicating time slots, compatible with the reception map, for transmission of packets to the intended receiving node; and transmitting packets to the intended receiving node according to the proposed transmission map.

41. (New) The system of claim 38, wherein the scheduling of packet delivery over the LAN comprises:

transmitting a bandwidth requirement to an intended receiving node;
receiving from the intended receiving node a transmission map indicating time slots during which transmission to the intended receiving node would not conflict with other transmitters; and

transmitting packets to the intended receiving node according to the transmission map.

42. (New) The system of claim 38, wherein the scheduling of packet delivery over the LAN comprises:

transmitting a query to a designated master node for a LAN-wide transmission map;

receiving from the master node a LAN-wide transmission map indicating time slots during which transmission to an intended receiving node would not conflict with other transmitters;

transmitting to the master node a proposed transmission map compatible with the LAN-wide transmission map, said proposed transmission map indicating time slots during which the transmitting node intends to transmit packets to the intended receiving node; and

transmitting packets to the intended receiving node according to the proposed transmission map.

43. (New) The system of claim 37, wherein the LAN switch is an Ethernet LAN switch.

44. (New) The system of claim 43, wherein the Ethernet LAN switch is coupled to a Wide Area Network (WAN) router.